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10/656,152	09/08/2003	Hoon-Tae Kim	249/406	9942

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EXAMINER	
CHAN, RICHARD	
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2618	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/656,152	KIM ET AL.	
	Examiner	Art Unit	
	Richard Chan	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-10 and 15-19* is/are allowed.

6)☒ Claim(s) *11 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 9/20/07 have been fully considered but they are not persuasive.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the examiner has cited the LC resonance circuit architecture including an inductor and capacitor as disclosed by Komori wherein the capacitance of the circuit may be adjusted by a phase locked loop. The Lim reference is clearly disclosing a phased locked loop circuitry 222 which outputs a control voltage. While the Snider reference clearly discloses a varactor circuitry. The teaching of an LC resonance circuitry is known to one of ordinary skill in the art as an apparatus which is able to maintain specified gain levels of signals from a system. inputting a predetermined Therefore it would have been obvious to one of ordinary skill in the art to implement the LC resonance circuitry as disclosed by Komori to the output of the phase locked loop as disclosed by Lim in order to obtain a control the overall gain of the output signal.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lim US 6,993,314) in view of Komori (US 2005/0014476) and Snider (US 5,821,820).

With respect to claim 11, Lim discloses a low noise amplifier 824 used in an RF transceiver 800, comprising: a phase locked loop 222 for receiving a reference frequency signal from generator 218 and a signal output from the voltage controlled oscillator within 222 and for generating a control voltage 454 and 457, input to the varactor, for controlling the frequency of the signal output from the voltage controlled oscillator; however, Lim does not specifically disclose wherein an LC resonance circuit including a voltage controlled oscillator including a varactor; an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using the control voltage provided by

the phase locked loop to thereby change a resonance frequency of the LC resonance circuit.

Komori however discloses disclose wherein an LC resonance circuit including an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using the control voltage provided by the phase locked loop to thereby change a resonance frequency of the LC resonance circuit. Fig.1

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

It would have been obvious to one of ordinary skill in the art to implement the LC resonance circuit architecture to the power amplifier for the transmitting portion of the Lim receiver in order to properly adjust the gain of the output signal and to operate at the correct frequency band and the varactor disclosed by Snider in order to tune the voltage controlled oscillator of Lim.

With respect to claim 12, Lim discloses the power amplifier 896 used in an RF transceiver, comprising: a phase locked loop 222 for receiving a reference frequency signal from reference signal generator 218 and a signal output from a voltage controlled oscillator within 222 and for generating a control voltage 454 and 457 for controlling the frequency of the signal output from the voltage controlled oscillator; however Lim does not disclose a voltage controlled oscillator including a varactor wherein an LC resonance circuit having a cascade structure having a plurality of terminals and

including an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using the control voltage provided by the phase locked loop to thereby change a resonance frequency of the LC resonance circuit and adjust the gain of the power amplifier.

Komori however discloses wherein an amplifier Fig.1 an LC resonance circuit having a cascade structure having a plurality of terminals and including an inductor and a capacitor, wherein a capacitance of the capacitor is adjusted using the control voltage provided by the phase locked loop to thereby change a resonance frequency of the LC resonance circuit, which can adjust the gain of the power amplifier.
And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

It would have been obvious to one of ordinary skill in the art to implement the LC resonance circuit architecture to the power amplifier for the transmitting portion of the Lim receiver in order to properly adjust the gain of the output signal and to operate at the correct frequency band and the varactor disclosed by Snider in order to tune the voltage controlled oscillator of Lim.

Allowable Subject Matter

3. Claims 1-11 and 14-19 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claim 1, Lim discloses the multiband receiving apparatus in Fig.8, comprising: a phase locked loop 222 for receiving a reference frequency signal from 218 and a signal output 454 from the voltage controlled oscillator and for generating a control voltage, and a down mixer 409, including a plurality of transistors, for receiving the control voltage, Lim however does not specifically disclose wherein the multiband receiving apparatus comprises a voltage controlled oscillator including a varactor for controlling the frequency of the signal output from the voltage controlled oscillator block; an input voltage applied to the gate of a transistor acting as a source among the transistors, for operating at a frequency band that is adjusted by the control voltage, and for converting the amplified signal into a low-frequency band signal; a low noise amplifier for receiving the control voltage, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal;

The Jerng reference however discloses a frequency downconveter 663, which discloses an input voltage, applied to the gate of a transistor acting as a source among the transistors, for operating at a frequency band that is adjusted by the control voltage, and for converting the amplified signal into a low-frequency band signal.

And the Matero reference discloses a low noise amplifier 58 for receiving the control voltage, for operating at a frequency band that is adjusted by the control voltage,

and for amplifying a received signal while suppressing a noise signal in the received signal.

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

However the prior art does disclose wherein a low noise amplifier for receiving the control voltage from the Phase Locked loop, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

Claims 2-5 are dependent on allowable claim 1.

With respect to claim 6, Lim discloses the multiband transmitting apparatus, comprising a phase locked loop 55 for receiving a reference frequency signal 75 and a signal output from the voltage controlled oscillator 72 and for generating a control voltage, input to the varactor for controlling the frequency of the signal output from the voltage controlled oscillator 76; an up mixer 466, however Lim does not specifically disclose wherein the transmitting apparatus includes : a voltage controlled oscillator including a varactor; a plurality of transistors, for receiving the control voltage, for controlling an input voltage applied to a gate of one of the plurality of transistors that operates as a source, for operating at a frequency band, and for converting a transmitting signal into a high-frequency band of signal; and a power amplifier for

receiving the control voltage, for operating with a gain that is adjusted by the control voltage, and for amplifying the converted signal by the adjusted gain.

The Jerng reference however discloses wherein the receiving apparatus includes a plurality of transistors, for receiving the control voltage, for controlling an input voltage applied to a gate of one of the plurality of transistors that operates as a source, for operating at a frequency band, and for converting a transmitting signal into a high-frequency band of signal, it is well known in the art that the mixer configuration can be used as an down converter and as an upconverter.

And the Matero reference discloses wherein a power amplifier 58 for receiving the control voltage, for operating with a gain that is adjusted by the control voltage, and for amplifying the converted signal by the adjusted gain

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

However the prior art does disclose wherein a low noise amplifier for receiving the control voltage from the Phase Locked loop, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

Claims 7-9 are dependent on allowable claim 6.

With respect to claim 10, Lim discloses the multiband transmitting and receiving apparatus in Fig.8, comprising: a phase locked loop 222 for receiving a reference frequency signal from generator 218 and a signal output from the voltage controlled oscillator 454 and for generating a control voltage, input to the varactor, for controlling a frequency of the signal output from the voltage controlled oscillator within 222; a low noise amplifier 824, a down mixer 409, up mixer 466, however Lim does not specifically discloses wherein the multiband receiver specifically comprises a voltage controlled oscillator including a varactor; the low noise amplifier for receiving the control voltage, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal without amplifying a noise signal in the receiving signal; a down mixer, including a plurality of transistors, for receiving the control voltage, for controlling an input voltage applied to the gate of one of the plurality of transistors acting as a source, for operating at a frequency band that is adjusted by the control voltage, and for converting the amplified signal into a low-frequency band signal; an up mixer, including a plurality of transistors, for receiving the control voltage, for controlling an input voltage applied to the gate of one of the plurality of transistors acting as a source, for operating at a frequency band that is adjusted by the control voltage, and for converting a transmitting signal into a high-frequency band signal; and a power amplifier, which receives the control voltage, for operating with a gain that is adjusted by the control voltage and for amplifying the converted signal by the adjusted gain.

The Jerng reference however discloses a frequency downconveter 49, which discloses an input voltage, applied to the gate of a transistor acting as a source among

the transistors, for operating at a frequency band that is adjusted by the control voltage, and for converting the amplified signal into a low-frequency band signal, it is well known in the art that the mixer configuration can be used as an down converter and as an upconverter.

And the Matero reference discloses a low noise amplifier 58 for receiving the control voltage, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

However the prior art does disclose wherein a low noise amplifier for receiving the control voltage from the Phase Locked loop, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

With respect to claim 14, Lim discloses a data receiving method, which is implemented on multiple frequency bands, comprising: (a) receiving a signal from antenna 130; (b) receiving a reference frequency signal from generator 218 and a signal output from a voltage controlled oscillator 222 including a varactor and controlling a control voltage, input to the varactor, that controls a frequency of the signal output from the voltage controlled oscillator 454 and 457, and an adjustment of the amplification,

and a conversion method of the amplified signal, however Lim does not specifically disclose wherein the data receiving method comprises a voltage controlled oscillator including a varactor; (c) receiving the control voltage, adjusting an operating frequency band, operating at the adjusted frequency band, and amplifying a received signal while suppressing a noise signal in the received signal; and (d) receiving the control voltage, controlling an input voltage applied to a gate of a transistor operating as a source using the control voltage to adjust an operating frequency band, operating at the adjusted frequency band, and converting the amplified signal into a low-frequency band signal.

The Matero reference however discloses the receiving the control voltage, adjusting an operating frequency band, operating at the adjusted frequency band, and amplifying a received signal while suppressing a noise signal in the received signal with amplifier 58.

And the Jerng reference discloses the receiving the control voltage, controlling an input voltage applied to a gate of a transistor operating as a source using the control voltage to adjust an operating frequency band, operating at the adjusted frequency band, and converting the amplified signal into a low-frequency band signal with down converter 663.

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

However the prior art does disclose wherein a low noise amplifier for receiving the control voltage from the Phase Locked loop, for operating at a frequency band that

is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

Claims 15 and 16 are dependent on allowable claim 14.

With respect to claim 17, Lim disclose the data transmitting method, which is implemented on multiple frequency bands, comprising: (a) receiving a signal from antenna 130; (b) receiving a reference frequency signal from reference generator circuitry 218 and a signal output from a voltage controlled oscillator 222; and generates a control voltage 454 and 457, input to the varactor, that controls a frequency of the signal output from the voltage controlled oscillator 222; and up converter 466, and amplifiers 894' however Lim does not specifically disclose wherein the data transmitting method is including a varactor; receiving the control voltage, controlling an input voltage applied to a gate of a transistor operating as a source using the control voltage to adjust an operating frequency band, operating at the adjusted frequency band, and converting the received signal into a high-frequency band signal; and (d) receiving the control voltage to adjust the gain and amplifying the converted signal by the adjusted gain.

The Jerng reference however discloses the receiving of the control voltage, controlling an input voltage applied to a gate of a transistor operating as a source using the control voltage to adjust an operating frequency band, operating at the adjusted frequency band, and converting the received signal into a baseband signal with mixers

49, however it would have been obvious to implement the architecture of the mixers and implement them as up converter mixers.

The Matero reference discloses receiving the control voltage to adjust the gain and amplifying the converted signal by the adjusted gain with amplifier 58.

And the Snider reference discloses a varactor 30 during operation of the oscillator is used to tune the resonator to a particular frequency channel with the operating frequency band. (Col.3 line 24-39)

However the prior art does disclose wherein a low noise amplifier for receiving the control voltage from the Phase Locked loop, for operating at a frequency band that is adjusted by the control voltage, and for amplifying a received signal while suppressing a noise signal in the received signal.

Claims 18 and 19 are dependent on allowable claim 17.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Chan whose telephone number is (571) 272 0570. The examiner can normally be reached on Mon - Fri (9AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571)272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Richard Chan
Art Division 2618
11/7/07

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